

Application No. 10/605,408
Docket No. YOR920000707US2
Amendment dated June 9, 2005
Reply to Office Action of February 9, 2005

Amendments to the Specification:

Please replace paragraph [0010] with the following amended paragraph:

[0010] Figure 1 represents processes within the scope of this invention by which a multilayer structure 16 can be formed in which a strained silicon (strained-Si) layer 12 lies directly on an insulator layer 14, such that the structure 16 can be further processed to yield a strained silicon-on-insulator (SSOI) structure 10 suitable for fabrication of MOSFET's and other IC devices such as those represented in Figure 2. Figure 1 illustrates four alternative techniques ("Alternatives" (A), (B), (C) and (D)) for the first step of the process represented in Figure 1. With each of the alternatives shown in Figure 1, a multilayer structure is bonded to a substrate so that the insulator 14 is between the strained-Si layer 12 and the substrate, and such that the strained-Si layer 12 directly contacts the insulator 14. While four techniques are shown and will be discussed below, it is foreseeable that other techniques could be devised and employed to yield the intermediate multilayer structure 16 of Figure 1, and such modifications are within the scope of this invention. In addition, while Figures 1 and 2 show

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multilayered structures comprising a limited number of layers, those skilled in the art will appreciate that additional layers of various materials could be added to the structures without substantively altering the invention. Of importance is that each technique shown in Figure 1 produces a strained-Si layer 12 that is supported by a layer (e.g., 14/24) other than that which originally induced strain in the silicon layer 12. Therefore, additional layers can be included in the structure 16 as long as this ~~the this~~ fundamental aspect of the invention is met. The four alternatives differ primarily in the materials being bonded, e.g., silicon-to-insulator (Alternative (A)), insulator-to-insulator (Alternative (B)), insulator-to-semiconductor (Alternative (C)), or semiconductor-to-semiconductor (Alternative (D)).

Please replace paragraph [0018] with the following amended paragraph:

[0018] With each of the alternatives shown in Figure 1, the resulting multilayer structure 16 is further processed to remove the SiGe substrate 22, leaving the SSOI structure 10. Most notably, the invention eliminates the substrate 22 that originally induced the desired tensile stress in the silicon layer 12. According to the

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invention, the tensile stress in the strained-Si layer 12 is maintained by the SOI structure 10, more particularly, the insulator 14 and possibly the substrate 24. The extent to which the substrate 24 contributes to maintaining the strained-Si layer 12 will depend on the particulars of the insulator 14. For example, the substrate 24 is more likely to have an affect if the insulator 14 ~~insulator 13~~ is very thin. It is important to note that the ability for strain already induced in a silicon layer to be substantially maintained by a substrate that does not have a strain-inducing lattice mismatch with silicon was unknown until determined in an investigation leading up to this invention.